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THE REDUCTION OF CANCER

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THE REDUCTION OF CANCER

BY

THE HON. ROLLO RUSSELL
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THE REDUCTION OF CANCER

THE great increase of communication between all parts of the world which has taken place in recent times is rapidly obliterating many of the distinctions between countries and races which were noted by our predecessors. These distinctions were not only of great interest for the purpose of ethnographic inquiry, but gave material for conclusions of value to the race, and in no respect were the several characteristics of greater import than in relation to physical health. The best opportunities of comparison occurred during the last century, when many countries were first visited and observed in a scientific spirit. The differences in conditions were then to a great extent undisturbed. Even the counties of England had their well-marked characteristics. We have therefore in the records of travellers during the nineteenth century the chief depository from which we may derive knowledge of many of the conditions on which the health and the diseases of a nation depend.

A very moderate amount of research and reasoning upon the known facts of health in the countries of the world is sufficient to lead to results which at once give us the means of arresting and expelling some of the worst maladies which now threaten the vitality of the

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race. Moreover, we have still the means of coming to conclusions, practically certain, as to the relation of peculiar conditions to peculiar health, or to peculiar diseases, from the evidence of nations now living, which have been little infected physically by means of human intercourse and by world-wide commerce.

It is rather strange that more attention has not been bestowed on the power we possess of discovering the causes of disease by comparing nation with nation, and condition with condition. It is a bloodless method, inflicting no pain on any sentient creature and absolutely certain to increase national well-being, if the knowledge be reasonably applied. There is no more profitable means of attacking particular maladies and national degeneration than by ascertaining where health is highest, where disease most prevalent, and by impressing the facts upon the public, through instruction and legislation.

Governments and public authorities have a truly sacred power, equal to what was formerly ascribed to Providence, of conferring happiness or misery. As yet they have not gone far on the path of regeneration.

Results of immediate practical value are attained by the mere exercise of scientific sense in practical reforms. Thus, by the persistent campaign of a few doctors and laymen, hydrophobia, the most horrible of diseases, was in a very few years exterminated from Great Britain. Knowledge of the only common cause, the bite of an infected animal, and comparison of our own with certain foreign countries, which were free from rabies owing to the regulation of dogs, enabled these pioneers to declare that we could destroy the disease by a few simple enactments. The Government of the day, to

its honour, legislated accordingly. And so a very awful form of torture, and an anxiety to parents, have been wholly removed.

It is proved that cholera, plague, typhus, and some other diseases are banished by clean water, clean air, and clean houses ; thus, if India would imitate England and sacrifice her fatalism, her multitudinous population would cease to suffer from these afflictions. Typhus only lingers in a few dirty places, it is rarely seen in the United Kingdom ; cholera is guarded against by port regulations and good water-supplies, and plague likewise yields to clean conditions. On the other hand, if the people of England were to imitate the natives of some plain-living countries in their food and drink, and to remove from their dietary hot liquors and unwholesome luxuries, it is quite certain that they would not be subject to dental decay, indigestion, and weak nerves as they are now. "Brahmin skulls on the banks of the Ganges showed no case of general dental decay." Similarly, ancient skulls dug up in Britain show perfect sets of teeth.¹ Even so late as the last generation, in the remote country the fathers of men now living, whose chief food came from the cornfield, the garden, the dairy, and the spring, had perfect teeth in their old age. The teeth of most wild native races are excellent, the teeth of most Britons wretched, even in childhood or before middle age. Considering the importance of sound teeth to health, an inquiry into the dental condition of various races would be valuable to

¹ Sir James Crichton Browne has just given an instance. Eleven skulls of ancient Scottish men dug up near his native town, Dumfries, showed perfect teeth in every case. In certain schools recently examined 96 per cent. of the children had decayed or bad teeth.

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this country. Meanwhile, it seems to be certain that wherever a people lives on uncorrupted grain and fruit, drinking little but water, and abstaining from tobacco, hemp, &c., and very hot food and drink, the teeth are strong and remain good till old age.

The problem of the causation of some of the worst diseases is much simpler than is generally supposed. There is a needless assumption of mystery and scientific nescience, if the phrase may be used. That is to say, that while the exact mode of origin, the chemico-physiology, and the cell interaction may be obscure, and no doubt extremely difficult to account for in detail, the detection of the practical means of causation and prevention is a matter of plain reasoning upon evidence for which we have abundant data. Thus hydrophobia was easily exterminated by preventing infected dogs from biting, although the appearance and life-history of the bacillus or microbe was unknown. Similarly, typhus is exterminated by acting on the mere knowledge of the value of cleanliness, and typhoid is reduced by acting on the knowledge of its connection with faecal matter in the wrong place. The discovery of the means of causation usually gives into our hands the means of prevention. We possess the power, but we must also have the will to exercise it.

Is not this true also of cancer ? When we find that malignant disease has only recently become common here, is rare in some nations now, increases in proportion to particular modes of living, and is almost or entirely absent in communities of other habits, we can hardly fail to bring the channels of evil into the light. Not climate, soil, or obscure influences are the cause of the

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vast majority of maladies, but human habits which are capable of alteration.

Cancer is widely distributed. Some form of it appears to affect many kinds of animals but rarely; and among beasts of the higher order, such as wild cattle, sheep, pigs, and monkeys, all in the wild state, it is hardly ever, if ever, seen. Among domestic animals in certain conditions it is not uncommon, and the pig is said to be by far the most subject to cancer of all animals. Mr. W. Hunter, the eminent veterinary surgeon, has testified to the extreme rarity of cancer in the lower animals. He knew many veterinary surgeons who had never seen a cancer.¹ Dr. Vacher, however, of the Cheshire County Council, who has had a very large experience, states that cancer occurs not infrequently among domesticated animals. Dr. Bashford, of the Imperial Cancer Research Fund, states that cancer has been found in the horse, dog, cat, and in cattle and hens. Among many thousands of pigs under one year old examined in Glasgow no case was found. In old cows, there was a preponderance of cases.² Age always predisposes.

The difference between the wild and domesticated state is mainly in the food. In the case of the pig there is the maximum difference, and a great restriction of exercise. The wild boar is a clean feeder, the pig of the sty is kept horribly dirty, and fed on horrible food, offal both animal and vegetable. A veterinary inspector spoke of having seen near London the skeletons of three cows and one horse in a pig-yard. Everything

¹ "Signs of Health and Disease in Animals" (*Journal of the Sanitary Institute*, 1901).

² *Journal of the Sanitary Institute*, 1906.

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that is most disgusting is thought fit for pigs, and these pigs, compelled to be nasty, and shut up in stinking prisons, are straightway killed and nicely served up to civilised man on clean tables. Entrails, kidneys, liver, feet, repulsive when alive, often infected with parasites, become delicacies when dead and hot. A dirty plate disgusts us, but these foul corpses are put inside the long-suffering human body with relish. We daintily polish the outside dish, and recklessly swallow the filth of beasts.

If pigs were kept clean, in roomy inclosures, and fed not excessively on their natural diet of roots, nuts, acorns, and vegetables, we may be confident that they would be comparatively free from cancer and most other diseases, for these are the only considerable differences between the wild and domesticated state. So long as swine were allowed to roam in the forests, they were under tolerably natural conditions. In the sty the pig gets many diseases, and confers some of them on his devourer. Dr. Hime of Bradford has observed that the pig as a rule gets nothing but food of the most stinking character—"Can the flesh of animals born in filth, fed on filth, and reared in filth be regarded as wholesome food?" And Dr. Marston of Birkenhead declares that if there is one class of animals subject to diseases of all kinds it is the pig. Inflammation of the liver, irritation of the alimentary tract and of the kidneys, and other diseases are due, he says, to the filth which is given them for food. Moses and the Hebrews were not unwise.

1. Here, then, we have arrived at a clear conclusion, namely, that wild animals, the higher mammalia, living on their natural food, are on the whole almost entirely

exempt from cancer and many other serious diseases; and that domesticated animals, often richly fed and deprived of their natural food and exercise, are subject to many serious diseases, among them, occasionally, cancer, especially where flesh and garbage are substituted for roots, fruits, and herbage. It has been reported by a butcher that sixty per cent. of stall-fed cattle have cancerous livers. Whatever is meant by "cancerous" we may be sure that these animals are badly diseased, through high feeding and prevention of exercise. It is probable, but not proved, that cases occurring among old cows may be indirectly due to unclean water and food, containing parasites, and to spiced and other improper or irritating food, such as brewers' grains, which is often given to dairy cows. Hot mashes, regularly given, have been proved to destroy the teeth of cows, and would consequently affect digestion. A very small proportion, even of domesticated animals, is ever attacked by cancer where proper food, air, and exercise are allowed. Let us note in passing that as human cancer is often started by the depressing and toxicating effect of worry, so in animals toxication must often be caused by the fearful distresses, worries, and prolonged agonies undergone by cattle in transport before slaughter. They are also often subject to disgusting diseases, the torments of flies, heat, &c., before being put out of their misery. Chicago is not the only place where rotten carcases are packed into neat jars, or sophisticated beyond recognition for the palate of luxury.

It seems to be true that cancer is produced in animals by the action of an irritant poison within the system. The Cancer Research Fund investigators indicate, as a

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result of their observations, that "it does appear as if the *irritating stimulus* which produced this result might be of the nature of a chemical agency in the blood." Even in plants, growths occur which are cancerous in destructiveness. "Some kind of irritating stimulus applied to the plant's tissues will produce them. The birth of cancer consists in the application of some kind of irritating stimulus to the ordinary cells." The two operative factors, we may infer, are continued irritation and susceptibility to irritation. An increased susceptibility to irritation is very commonly the result of the application of a stimulant, especially if internal, affecting blood and nerves. The nature of the cancer cells, recently disclosed, should be borne in mind.¹

2. Now let us see whether a similar rule holds good in the human race. The natives of many countries, where uncivilised, or where living on plant products, with little or no stimulant or narcotic, are free from cancer, or rarely affected. Thus the Chinese in country parts, the Syrians, Persians, Arabians, Siamese, Burmese, some of the Japanese peasantry, people of New Guinea and Borneo, Polynesians, natives of Lagos, most of the black races of Africa, Guatemalans, people of Tunis, Morocco, Mauritius, Turkey (country), Indians of Mexico, aborigines of the Gold Coast, Ashanti, and Queensland, and of various parts mentioned in the Official Reports, have had little or no cancer. In some of these, however, cancer has rapidly increased in localities affected by European customs and habits. And Europeans living

¹ "The cancer cell is very much at the mercy of subtle changes in its environment." . . . "The soil plays an important part even in normal animals" (Bashford, *Science Progress*, June 1907).

in their customary way on any soil and in any climate have not been exempt.

On the other hand, the people of civilised countries not necessarily cultured, but having access to certain luxuries, and largely using them, have a very high rate of cancer. The highest rates of all are found in Holland, Bavaria, Switzerland, Scandinavia, Denmark, and somewhat less in England, Ireland, white Australia, New Zealand, the United States, and a few other countries.

The contrast between the two sets of populations, those living simply, and those living luxuriously, is very striking. But we find, on looking closer, that in many cases there is no great difference in the ways of living except as regards certain articles of diet. And then it comes out beyond question that the invariable difference in regard to kind is only in a very few articles. So that the common cause of cancer must be not only in the diet, but in a few articles of diet. These are, in the main, tea, coffee, some kinds of beer, animal flesh, and apparently several stimulants and narcotics, including tobacco. But animal flesh by itself without other stimulants does not appear of necessity to cause much cancer. On the other hand, tea or coffee as commonly used may, even without the other articles, cause much cancer. It does not much matter whether a set of people is rich and eats expensive food, or is poor, so long as it spends a large proportion of its income on certain meats and drinks. Thus a city or country district of which the habitual fare is much flesh, heavy dinners, sugary stuffs, sophisticated beer or wine, and much tea or coffee, is certain to have, at least after one or two generations, a high cancer rate; but a poor

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district which consumes bread, pork, or other meat, cheese, sweets, and strong tea or coffee in large quantities, or even little but bread, and much strong tea, will also have much cancer. In each case the chief factor is the tea or coffee, but the excess in animal flesh, hard cheese, and sweet things, especially after middle age, helps to predispose. We must remember that the misuse, or excessive use of unfit food, involves the disuse of specially beneficial foods, such as oatmeal, corn, fruit and water. Sir James Crichton Browne recently related the remarkable effect of oatmeal in increasing, and of inferior foods in diminishing the development of the thyroid gland, in rats. Now the thyroid gland has an important function, and it is far from unlikely that physical deterioration in man may be connected with the failure of the modern diet to sustain its vigour. The pancreas, also, which supplies the means of proper digestion is seriously affected and enfeebled. Less important, but still far from negligible, the contribution to digestion from the salivary glands is impaired by toxic fluids.

All ingesta not really nutritious, and containing a strong poison which pleasantly excites, are, as a matter of fact, when habitually and largely consumed, not only luxuries, but destructive luxuries. So used, the tea, coffee, and tobacco continually imbibed by the majority of the rich and poor, pile up an adverse account in the body for which the penalty, if exacted, is often severe. In many obscure ailments, such as those which were a constant distress to Carlyle and to Huxley and Spencer, the part they play is not suspected. Life becomes a burden, and "rest cures," foreign climates, and medicines are tried in vain. But plain diet, free from

stimulants, has usually been the last thing thought of. It cured Huxley.

Further inquiry as to the consumption of these articles in different countries proves that the very highest rates of cancer are in those countries where the amount consumed is the very highest. Excluding Switzerland from the account, Holland is highest of all, both in coffee and tobacco, and in addition one of the largest European consumers of tea ; Bavaria and Belgium are highest in beer, and high in flesh, coffee, and tobacco consumption. Scandinavia, similarly, is a very large consumer of coffee ; the amount has risen to an extraordinary degree ; cancer, for a poor country, is exceedingly high, and conditions in Denmark are similar. In a long list of countries, *all* the small consumers of flesh, tea, coffee, beer, and tobacco, have a small cancer rate ; *all* the large consumers have a high rate. I have counted eight places which are officially stated to have drunk coffee and tea very largely,—all had a high cancer mortality ; on the other hand, I counted twenty-nine places which drank little, and *none* had a high mortality. Further, twelve places drank either very little or none ; of these seven had a low and five a very low rate, or almost no cancer. Seventeen places had a very high (about the highest) cancer rate ; of these thirteen were large or very large consumers of flesh, but *all* were large consumers of tea or coffee.

The following list gives the deaths from cancer in various countries per 10,000 living, deduced from the tables in the Registrar-General's Return for 1905, pages 94 to 126. (For the qualifications to be borne in mind, see p. lxviii. of the Report.)

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	<i>Average annual rate in 10 years, 1898 to 1904</i>	<i>Rate in 1905 (or nearest)</i>
Switzerland	12·8	12·9
Holland (The Netherlands)	9·3	10·1
Norway	8·7	9·5 (1904)
United Kingdom	7·4	...
England and Wales	8·2	8·9
Scotland	7·9	...
German Empire	7·3	7·8 (1904)
Victoria	7·0	7·9
Austria	6·9 (1894-1903)	7·2 (1903)
New Zealand	6·2	6·5
Ireland	6·1	7·5
Prussia	6·0	6·9
South Australia	5·9	6·7
New South Wales	5·7	6·5
Belgium	5·6 (1904)
Ceylon	5·6	5·3
Tasmania	5·5	5·4
Italy	5·2	5·5
Japan	4·9 (1899-1903)	5·5 (1903)
Queensland	4·8	6·7
Spain	4·3 (1900-1904)	4·7 (1904)
West Australia	3·5	5·1
Hungary	3·4 (1897-1904)	4·0
Chile	2·9
Jamaica	1·6	1·9
Servia	0·8	1·0

N.B.—The preponderance of males in the Colonies, and of young persons, diminishes the rate of cancer.

The Registrar-General observes that the rate for England and Wales was exceeded in the record by three countries only, Switzerland, the Netherlands (Holland), and Norway. But, from outside officially recognised reports, Sweden, Denmark, and some of the German provinces must be added to these.

Excluding the white colonies, the lowest rates were in Japan, Spain, Hungary, Jamaica, and Servia.

The following countries were, according to the Official Statistics of the Board of Trade and other documents, the largest European consumers of tea and coffee ; the amount is given in lbs. per head.

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The rate of cancer is given in the second column.

	<i>Coffee</i>	<i>Cancer</i>
Holland (1901)*	18·56 lbs. (plus tea = 20·6)	9·13 (1900)
Denmark (1901)*	16·9 ,,,	12·5 (towns 1900)
Norway (1900)*	10·35 ,,,	8·45 (1900)
Sweden (1900)*	10·9 ,,,	9·5 (1886-7)
Belgium (1901)*	10·56 ,,,	Moderate
Bavaria *	Very large	9·9 (1900)
Parts of Germany	Very large	{ Stuttgart, 12·7 Dresden, 10·6
Switzerland *	Very large	12·8 (about)

The seven countries (*) consuming the largest amount of coffee have out of all nations of the world the highest rate of cancer, with the exception of Belgium, which has not afforded statistics, but of which the rate appears to be moderate. It has consumed about half as much coffee as Holland in recent years, and has had apparently about half as much cancer. Parts of Germany also use an enormous amount of coffee, and all these have an exceedingly high cancer rate.

Belgium is a remarkable exception, apparently, of which I hope to learn more. Owing to the removal of the duty on coffee in 1903, there was a jump in coffee imported, apparently ultimately for home consumption, from 23,523 million kilograms in 1903 to 70,029 in 1904. The Belgian rate of cancer in consequence seems bound to increase rapidly.

A number of countries using much coffee and tea, but still considerably less than the above, have a moderate or high rate of cancer, always less than Holland, Denmark, Scandinavia, and Bavaria.

The following have a very small consumption of coffee and tea, and it will be seen that in most cases their cancer rate is correspondingly low :—

	<i>Coffee per head</i>	<i>Cancer</i>
Hungary	1·0 (1899)	3·3 (1900)
[Compare Austria	2·8	7·0]
Italy	0·97	5·2
Spain	little	1·057 (1899)
Portugal	little	1·057
Russia	0·14 (tea)	little
Roumania	0·67	little
Sardinia	little	1·7 (1889)
Calabria	little	2·4 (1889)
Guatemala	little	0·42
[Compare Uruguay	—	4·47 (1897)]
Greece	little	little
Persia	little	little

The countries using least coffee and foods of luxury have the lowest cancer rates of Europe, and, as already stated, other countries of the world, which use no such articles, have little or scarcely any cancer.

The rather high rate of Italy shows that besides flesh and stimulant drinks, of which Italians do not partake largely, there are other powerful causes ; what these are I do not know. The Italians are excessive smokers, and this may to some degree account for the rate of 5·2. The poorer parts of Italy have less than half as much of the disease.

An official descriptive account of Sweden, lately published by order of the Swedish Government,¹ states that “the use of coffee has very greatly increased ; it is often carried to excess by women . . . meat is about the European average.” The following figures are given, representing in hectograms per head the consumption of coffee and tea by various countries in the years 1891–95 :—

	<i>Coffee</i>	<i>Tea</i>		<i>Coffee</i>	<i>Tea</i>
Sweden	34·5	0·31	Germany	24·1	0·51
Norway	38·6	0·5	Austria-Hungary	8·7	0·18
Denmark	30·5	1·9	Switzerland	28·6	0·72

¹ “Sweden.”

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	<i>Coffee</i>	<i>Tea</i>		<i>Coffee</i>	<i>Tea</i>
Finland . . .	22·3	0·25	France	18·4	0·17
Great Britain and			Italy	4·2	0·01
Ireland . . .	3·3	24·87	Spain	3·1	0·04
Netherlands . . .	67·3	5·93	Portugal	3·9	0·5
Belgium . . .	38·6	0·11	Russia	0·5	3·09

Abstinence from some of the articles named, or moderate use, produces a moderate mortality; abstinence from all the stimulants, narcotics, and irritants produces either a very low mortality or apparent immunity. Very moderate use of all the articles produces a very moderate mortality. Thus we may make out a list of scores of countries using these substances largely, moderately, and slightly or not at all, and, after allowing for age-distribution, &c., predict with fair accuracy the rate of cancer which will actually be found in statistics.

Of large towns, Copenhagen and Munich had the highest cancer rate in the last ten years. Both are *extremely* large consumers of beer and coffee, and large consumers of flesh. Towns with a moderate and small cancer rate have respectively a moderate and small consumption of such articles. The contributory testimony is so uniform as to afford, so far as it goes, and it does go far, no exception to the rule.

These facts form a body of exceedingly strong presumptive evidence that cancer depends to a great extent on the poisonous ingredients of the articles named. That they are poisonous, chemically and physiologically, is an established fact. The flesh of beasts, though not a poison, is well known to form poisonous matter in the body when used in excess, and often even in moderation, as during illness, in convalescence after some diseases, and in rheumatic and gouty constitutions,

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which are numerous. There is no surer way to health than the removal of flesh, toxic drinks, and too abundant sweets from the diet. This is in accordance with the nature of man, which is stated by the greatest physiologists, such as Cuvier, Sir Charles Bell, Gassendi, and Ray, to be fitted for a diet derived from plants and not from beasts, and by some of the greatest medical men of the age to be greatly damaged by the stimulant poisons, which are not foods, but drugs.

If now, in order to test these evidences by other lines, we take the case of natives, in a cancer-free district, living on European diet, and if we take groups of people in European States living exceptionally on a clean, plain, natural, and unstimulant diet, what do we find?

Most positively the facts present themselves. Among the few Europeans in Fiji, several were operated upon for cancer by Sir W. Macgregor, C.B., M.D., D.Sc., but out of the large native population, not one. In British New Guinea, for nine and a half years he never saw a case among the natives, but at the end of that time a case occurred in a Papuan, who had lived practically a European life for seven or eight years, eating tinned meat daily. The Polynesians and Papuans were practically non-flesheaters. Here then we have the immunity of the plain-living multitude, the liability of the small number living like Europeans.

The Chief Medical Officer of British New Guinea reported that during nearly four years' stay there he had not seen a single case among the native population. Their diet is vegetable, with occasional fish, pig, or wallaby meat. Smoking is modified by filling sections of bamboo with smoke and inhaling from these. Though scars are extremely common, and lupus not rare, these

do not form sites for malignant growths as in Europe. Among the very small number of Europeans two cases occurred.

Similarly, the negroes of North America had little cancer while they lived frugally ; now, with more luxurious fare, they are much more subject to it. According to Billings, quoted by Dr. Roger Williams, there were two cases among whites to one among blacks. At the Cape it was common among the whites, very rare among the blacks.

Dr. Maddan wrote in 1900 that medical men in Egypt agreed that carcinoma is never found among the black races there who are vegetarian, but that among the Arabs and Copts, who eat much like Europeans, it is rather common. This is valuable testimony, for the conditions seem otherwise to be comparable.

The principal Medical Officer at Hong Kong reported that the Chinese in that town enjoyed a marked immunity, the rate being apparently only 4·45 against the English rate of 71 per 100,000. They smoke little, and their diet is mainly rice, with small quantities of fish or pork ; spices, pepper and hot chillies are little used. The Chinese drink weak tea, without milk. The country people, with a plainer diet, are still more free from cancer. Many of the Chinese of the coast towns and treaty ports like Hong Kong are gross and nasty feeders, and dirty in their habits.

In Bombay, in 1875, the rate was only 1 in 10,000. In Hyderabad, out of 2637 hospital operations in 1886, only two were for cancer. In Ceylon, the rate of cancer was reported recently at about 5·5 per 100,000, that is about one-fourteenth of the European. It is described as a rare disease.

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It would be interesting to compare the rate in Ceylon before and since the introduction of tea-planting on a large scale, and of European habits in some districts. Sir Samuel Baker a good many years ago described the natives as suffering from cancer in the cheek through chewing betel-nut composition. They also use hemp, arrack, and tobacco. Here it appears that this vegetable poison is sufficient to set up cancer in persons otherwise not predisposed.

In the Judicial Statistics of British India I find that the hemp habit was by far the most effective cause of insanity. Many of the natives of India, though not consuming flesh or tea or coffee, resort to other narcotics and stimulants, and in some large districts a highly nitrogenous food, dahl, is the staple. In these districts Dr. Haig observed terrible cases of high blood pressure and vascular degeneration. In parts of India there is thus a resemblance to the results of a luxurious European diet.

At Lagos, in fourteen years, Dr. Johnston only saw five cases ; in *each* of these the native had lived like a European.

Further examples are unnecessary, for I have already given a list of the countries where cancer is rare, and in all these the way of living is not the rich European. Wherever it becomes like the rich European, or where irritating toxic substances are ingested, cancer increases.

Thus the Tibetans eat a very large quantity of flesh and tea. Their tea is beaten up with butter and salt, and is described as the staple dish. They also drink beer. They are very heavily afflicted with tumours.

The case of Japan is instructive ; the Japanese are

moderate eaters, their diet is in the main vegetable, but they are described as perpetually drinking tea.¹ Their cancer rate is not low ; 20,000 persons die of the disease every year.

In Abyssinia and Algeria flesh and stimulants, such as beer and coffee, are consumed in the more civilised parts. There is a large excess of cancer, both among Europeans and natives, over the number usually found among black races.

In Buenos Ayres, a large flesh consumer, the rate is particularly high above that usual in Brazil. Coffee and beer are much used, and the people are luxurious.

3. Our third proposition is that, till recently, in every country the richer parts have suffered more than the poor, or, otherwise stated, the people in any country which used most luxuries, such as flesh, tea and coffee, had a higher rate than the poor, who used little.

This distinction, however, is rapidly becoming obliterated in England and some other countries, where the standard of wages has so risen as to allow the labouring class to indulge very heavily in such superfluities, of which they do not recognise the evils, and to which their fathers or grandfathers were unaccustomed. They are likely to suffer even more than the rich, for they commonly use large quantities of tea, long-infused or stewed.

The following examples of the rate of cancer per 10,000 living in rich and comparatively poor districts are instructive :—

¹ See "Murray's Handbook to Japan." The Japanese and Chinese drink their tea weak, without milk.

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City of London, ¹ 1902	7·4	Bethnal Green	1·8 ¹
Westminster, 1902 .	5·1	Southwark	2
Ireland—			
Armagh	10·47	Kerry	2·63 ²
Tyrone	7·33	Clare	3·83 ²
Carlow	7·42	Sligo	3·9 ²
France—			
Paris, 1900, . about 10		Marseilles	about 5·2
Eure and Loire, , 10·5		S.E. France, ² bordering Mediterranean	less than 5
French Towns, . about 10³			
Towns of Departments,		Finistère	3·9 ²
Gironde	7·3		
Italy—			
Lombardy (1881-3) .	9·3	Sardinia ²	2
		Sardinia ² (1889)	1·7
Italy (1891)	4·3	Calabria ²	2·4
		Sicily ²	2·8
Germany, Baden, Bavaria, Saxony . . High			
Munich, Dresden, Breslau	High	Prussia, Saxe-Coburg-Gotha	Medium
Austria	High	East Prussia (poor) ²	Low
U.S. (General)	High	Hungary ²	Low
South American towns—			
Buenos Ayres	High	U.S. (negroes) ²	Low
England, Rich residential towns (1880-1900)		Central America—Mexico ²	Low
High		Poor towns, 1860 to 1900, Low to moderate and rather high.	

It would be easy to lengthen these columns, and to show, what emerges, so far as I can discover, without a single exception, that in all countries the districts which use tea or coffee, beer, tobacco, and usually in addition beasts' flesh and potted meats most largely are much more subject to cancer than those which are either too

¹ The above rates for parts of London are for cancer, excluding carcinoma. In carcinoma alone, the City was highest. It was also highest in sarcoma. These figures for parts of London are not intercomparable without corrections which are very difficult to arrive at. But the general result for the years before 1875 was distinctly in favour of the poorer districts.

² Largely poor and vegetarian.

* Tumours (fatal) were included.

poor or unaccustomed to consume these articles. The figures given above, though probably not accurate, indicate very clearly that excess in various kinds of food predisposes to cancer, but especially excess in the strong toxines of tea and coffee. Habits of excessive smoking, betel or hemp chewing, and in fact several kinds of internal and external irritants, evidently start the disease in predisposed subjects. And we may confidently infer that predisposition to disease, as shown in tendencies to gout and rheumatism, is in many cases brought about in the family or race by habits in preceding generations, similar to the habits which predispose in the present. It may be stated emphatically that cancer does attack some of the most temperate and frugal, even some of those who keenly realise what many of the proximate causes are.

4. We have seen that a large number of people in many parts of the world are entirely or almost entirely untouched by cancer. The invariable condition of exemption is plain living, without addiction to toxic drinks, and generally a fare of vegetable products or fruit with little animal food. On the other hand, every community of opposite habits is badly attacked, some are even decimated. *There is no exception.*

That is an argument from places, or locality ; let us now test an argument from time. It is well known that the growth of cancer in Europe, America and Australia has been rapid, and that fifty or sixty years ago there was much less in the general population than at present. In those days labouring people used very little tea or coffee, and little flesh or other luxuries now abundant. Their condition is fully known to investigators. All classes except the rich were on the whole more frugal

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than at present. Moreover, the price of tea, coffee, and most imported meats was much higher than now.

It would not be possible to give anything like an accurate curve of the increase of cancer during the last sixty years, but since the disease has been better diagnosed and better statistics have been kept, say during the last thirty years, the continuous increase has been placed beyond dispute. Like the increase of insanity, it has been partially explained away by commentators, but the facts are too strong. The growth of physiological revolt is proved by the statistics showing a regular yearly increase of suicides which no faults of diagnosis or changes in enumeration can discredit. As to nervous ailments they have multiplied exceedingly. Our very fields have become hideous advertisements of the immense prevalence of the diseases of luxury. We have almost become a race of invalids ; that is to say, only a small proportion maintain perfect health.

According to the Registrar-General's Report for 1902, cancer is increasing "not slowly at each of the six age-groups below thirty-five years." Tumours in general have become exceedingly common.

In England the cancer rate for all ages has risen from 4·2 in 1871 to 8·3 in 1900 ; in Scotland from 4·4 to 8·6 ; in Ireland from 3·2 to 6·5 in 1901. In other countries and in certain large towns as follows, from 1891 to 1900 :—

Austria	5·4 to 7	Amsterdam	8·8 to 9·8
Bavaria	8·9 to 9·9	Boston	6·9 to 8·1
Holland	7·9 to 9·3	Breslau	8·6 to 10·8
Italy	4·3 to 5·2	Brussels	3·4 to 4·4
Norway	6·1 to 9·2	Buda-Pesth	8·7 to 7·2 ¹
Prussia	4·5 to 6·1	Copenhagen (with suburbs) . . .	13·6 to 13·9
Massachusetts	6·1 to 7·1		

¹ Decrease.

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Connecticut . . .	5·2 to 6·6	Denmark (other towns) . . .	11·6 to 11·1 ¹
New Hampshire . .	5·6 to 7·1	Munich . . .	12·7 to 11·9 ¹
Rhode Island . . .	5·1 to 6·8	Munich (1892—1899) . . .	12·7 to 14·7
		New York . . .	5·4 to 6·7
		Paris . . .	10·0 to 10·5
		St. Petersburg . . .	9·9 to 10 (1899)
		San Francisco . .	6·0 to 10·9
		Stuttgart . . .	7·6 to 12·7
		Vienna . . .	10·4 to 12·1

It will be noted that the increase has been especially rapid where the growth of commerce and prosperity has been greatest, as in San Francisco and Stuttgart. The decreases shown in the above list are slight. They occur where the amount of coffee drunk had reached a maximum some years before. On the other hand, there has been hardly any increase, if any, in cities or nations unaffected by the growth of commerce and the introduction of the non-alcoholic stimulants.

The following figures illustrate the comparative growth of the use of tea in England and of the prevalence of cancer :—

	1864	1871	1881	1891	1900
Tea (lbs. per head)	3·0	3·92	4·58	5·36	6·1
Cancer (per 10,000)	3·9	4·2	5·2	6·9	8·3

The correspondence is remarkably close, the tea and the cancer have both a little more than doubled. The consumption of tobacco rose from 1·41 in 1881 to 1·61 in 1891, and to 1·96 in 1900.

According to the Official Return to the House of Commons, the consumption of tea in the United Kingdom exceeds that of all other European countries and the United States put together. The pounds consumed

¹ Decrease.

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rose 43 per cent., from 175 to 250 million pounds in the seventeen years 1884 to 1900. And the amount per head has more than trebled since 1850.

The consumption of tea in Australia, however, is still larger per head, and in West Australia reaches the extraordinary amount of 10·07 per head. If the population were an ordinary one, I should expect to find the cancer rate there extremely high, but a large proportion consists of young people and hard-working miners. As a rule the sedentary are more attacked than the active. I cannot find statistics of the disease for this Colony. In Australia generally the consumption of flesh and tea is very large, and the cancer rate high, especially considering the average age. In Canada, where the amount of flesh and tea and coffee used is more moderate, the rate is lower than in Australia. Owing to rapid immigration, however, the average age is probably lower.

European countries and the United States make up for their abstinence from tea by a very large consumption of coffee, which contains the same kind of toxin as tea. And it appears from statistics that the rate of cancer has similarly increased with the increased use of coffee. The weight of coffee imbibed in the United States exceeds the weight of tea used in any country, and the cancer rate of coffee drinkers is the highest of all.

In Holland the rate has rapidly increased with the increasing consumption, at present enormous, of coffee and tobacco. Holland is also one of the very few countries consuming more than 1 lb. of tea per head, and pork is a common food, so that the so-called "uric acid," otherwise toxin, percentage must be extremely high.

Scandinavia, rather a poor country, has had a very large recent increase of cancer, corresponding with an extraordinary increase of coffee-drinking ; and the same may be said of Denmark.

In Switzerland, according to the Official Reports of 1870 and 1871, the Swiss are stated to have drunk coffee at least twice a day, and the quantities used must have largely increased in recent years. The labouring classes consume much flesh or cheese and black coffee at the same meals. Many of the women drink coffee, morning, noon, and night.¹

And in other countries generally, wherever flesh-eating and coffee-drinking, formerly exceptional, have become a daily habit, the rate of cancer has greatly risen. Excessive beer-drinking also adds to the mortality, as it does to the mortality from gout, rheumatism, liver disease, and dyspepsia. With the common use of hot drug drinks derived from tropical plants, nervous diseases and mental disturbance have at the same time very greatly increased. We thus come to the conclusion that cancer invariably increases with the larger and habitual use of these articles, that is, with richer, more stimulant, and more luxurious fare. Apart from these articles, and from excess and worry, there does not seem to be much tendency for cancer to grow with civilisation.

5. Another positive demonstration of the truth of this result is the immunity of certain classes which abstain, and the excessive liability of certain other classes which use excessively the articles named.

Thus (*a*) in the district of Ireland, where cancer is most common, there is a vast amount of tea-drinking among

¹ See "Diet and Strength," p. 163.

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farmers and labourers, which one of the Registrars reports as disordering the digestion, and another reports as injuring the digestion in combination with salted flesh and alcohol.¹ Strong tea is drunk seven times a day by many. There is a consensus of observers there as to the prevailing habit of using improper food. Cancer on the lip from excessive smoking of clay pipes is common. One doctor, who has given much attention to the subject, declares that the increase of cancer in Ireland has accompanied the change from a simple country diet (oatmeal, potatoes, eggs, fish, &c.) to "cheap, half-cooked American bacon, pancakes cooked in bacon fat, boiled tea, chemically coloured sugars, &c., and porter." One labourer and his wife used every week half a pound of tea! Half a pound, economically used, and infused in the cup rather than the teapot, is amply sufficient for four months.

(b) The great increase of cancer in North Wales among the labouring classes is stated by Dr. Douglas Macdonald to proceed *pari passu* with the consumption of tea and meat. In many cases, he says, an excess of uric acid precedes cancer in the stomach. Strong tea, bacon, and bread have replaced oatmeal and milk.

(c) Jews using pork, tea, &c., and living luxuriously are much more subject to cancer than either the poorer or the stricter class of Jews.

(d) Butchers are an extremely unhealthy class. Dr. William Farr twenty-two years ago found their mortality much heavier than that of any other class except innkeepers and potmen. They have one of the highest rates for cancer among occupations, yet their conditions

¹ See "Report on Cancer in Ireland."

of life and environment, apart from food, are unusually healthy. In a scheme of trade and workman's compensation insurance which I have just received, I find the premium for bakers, booksellers, &c., put at 3s. to 3s. 6d., while the premium for beer and wine merchants, publicans, and butchers is 12s. 6d. to 16s.

(e) Chimney-sweeps had an excessive cancer mortality so long as they were not careful to wash frequently and were addicted to stimulants. Wherever they are clean and temperate, as in parts of England and in some foreign countries, their mortality is normal.

(f) Commercial travellers, who in the past have been much addicted to drinking "nips" with their customers, and to heavy and frequent meals, have been much subject to cancer. "Amongst the very highest mortality rates for occupations," says Sir William Banks, "are those which include commercial travellers, coachmen, grooms, merchant seamen, maltsters, brewers, innkeepers, butchers, and plumbers." These are all rich feeders.

(g) The beer-drinking districts of France have a much higher cancer mortality than the wine-drinking districts. The beer-drinking people of Australia have a higher mortality than the non-beer-drinking. Beer-drinking towns, such as Munich, Stuttgart, and Copenhagen, have a very high mortality. Some kinds of beer have a specially mischievous effect in weakening the heart and in evolving the poisons of gout and rheumatism in the system.

(h) Women are generally large tea-drinkers, and have been more attacked than men by the disease, being sedentary and more prone to worry. It is more dangerous for women to make their delicate organism the tomb of carcases of beasts which they themselves

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would never think of slaughtering, flaying, cutting open with their own hands and devouring.

(i) In the Annual Report of the Department of Health for Chicago, for 1894, it is stated that the diseases named have increased as follows since 1861 : Nervous, 80 per cent. ; Bright's disease, 84 ; Heart, 360 ; Cancer, 812. The enormous increase of the last two is significant. And the Superintendent of the Insane Asylum reports in 1904 that the percentage of insane there is increasing at the fastest rate in the world. This in spite of the fact that the United States takes precautions to exclude immigrants of an unsound type. Insanity in Ireland is supposed by some to increase rapidly owing to the feeble stock remaining in the country ; insanity in Chicago increases still more rapidly among the sound and approved immigrants. Chicago is the greatest killer of beasts and packer of meats in the world, also one of the greatest consumers of stimulant drinks, especially coffee.

(j) Cancer is extremely common in "the timber districts of the United States and Norway," and probably also of Canada. Norway, we have seen, is a very large consumer of coffee. The backwoodsmen of Canada are very large consumers of pork, bacon, molasses, and especially of tea "black as ink," which is kept "near the fire by day and night." Without these "vast quantities" of inky tea and pork, &c., the men might be as healthy as they are strong. All factors such as unhealthy surroundings are eliminated.

(k) Cancer is very common among farmers, who, except for diet, lead the healthiest life. Farmers are remarkable for their addiction to pork and strong tea. All classes accustomed to use much animal flesh, hard

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cheese, tea, coffee, and beer, are subject to much cancer.

(l) Members of frugal societies and institutions rarely have cancer.

The physician to the Monastery of Grande Trappe met with no case, during twenty-seven years, of apoplexy, aneurism, gout, epidemic disease, or cancer. Trappist diet is of the following kind : black bread, vegetable soup, greens, cheese, fruit, water, and a little beer. Three meals a day. No doubt an equally harmless but more agreeable and varied diet can be easily contrived for common use. The perfect health attained by Trappists seems decidedly to be due to the absence of toxin from the food, and to its small quantity and easy digestibility.

6. It is generally agreed by medical men that the majority of cases of cancer are in the stomach and neighbouring parts, and in the mouth.¹ Where toxic substances are eaten or drunk, cancer chiefly affects the neighbourhood of the digestive organs ; where they are only chewed, the mouth is subject to attack. It thus appears that any race, however healthy, becomes liable to cancer, according to its habits, and that irritation following toxic applications is a common cause.

7. Also it is agreed that a large proportion of cases occurs in persons affected by rheumatism or heart disease ; rheumatism is the result of a toxic product, and animal flesh, tea, coffee, and beer are well known to cause or increase these maladies.

8. Also that a light mild diet, fruit, vegetables, &c.,

¹ "It is clearly established, by a careful study of the death-returns, that in more than half the cases in which death is attributed to cancer the primary seat of the disease is in the digestive organs. Frequency is excessive in the pylorus."— "Tumours," Dr. Bland-Sutton (Cassell), 1906.

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instead of flesh, is much the most suitable in cancer ; flesh diet and stimulants increase the malignant character. It may well be inferred that a disease of this kind is increased by the same cause as that from which it had its origin.¹

9. Also that luxurious eaters, and the over-nourished, are the most subject to cancer. (See the testimony of Sir William Banks,² Sir James Paget, Dr. John Bell, Dr. Keith, Dr. Verneuil, Dr. D. Roger Williams (Middlesex Cancer Hospital), Dr. Rabagliati, Dr. Gemmell (President, North of England Gynaecological Society), Dr. Kellogg, and others). It is not, however, generally recognised that persons who are quite moderate, except that they unwittingly go to excess in tea, coffee, or other toxic substances, are preparing themselves for being attacked by dismantling their fortifications. They are removing the vigorous living garrison of the body, and opening the gates to hidden parasites. Worry, also, will act on the digestive powers so as to allow the production of poisonous matters from food substances. The resulting fatigue further impels the subject to drink stimulants to counteract the feeling. Heart or nerves then suffer. A very large amount of illness is known to be thus produced. And it is apparently possible for a healthy person to be so affected by

¹ Professor Traill wrote that the hunger cure is perhaps the leading remedial measure ; Dr. John Bell that a vegetarian dietary tended to prevent cancer ; Sir James Paget advised a patient to try and starve herself ; Sir William Banks, a cancer specialist of thirty years' standing, said that our better classes eat infinitely too much, especially of animal food. "The better the nutrition, the more deadly and rapidly growing the cancer." Too much nourishing food, he thinks, has to do with the production of the cancerous diathesis ; it produces a widely spread secondary kind of gout.

² Lecture before the Medical Society of London, 1900.

prolonged excess of household cares or other troubles as to evolve sufficient toxic matter to start a cancer.

10. It is unnecessary to dwell on the enormous increase in the consumption of alcohol, with the consequent enormous increase in the number of insane, of suicides, of various severe diseases of liver, blood, and nerves. Horsley observes that among alcoholics cancer is more frequent than among abstainers.¹ The toxic effects of alcohol, and of habitual beer-drinking, especially among women, are now known to be transmissible in some degree to descendants, and the younger children of a drunken pair are more terribly afflicted than the elder. Evidence on this point may be found in the report of the Committee on Physical Deterioration, and in many medical papers.

The toxic effects of tea and coffee are less generally recognised. These drinks slowly undermine the constitutions of the majority of their votaries ; they damage the nerves, brain, digestion, liver, pancreas, and the bodily strength generally. Even in small quantities they spoil sleep in many cases, showing their potency. Stronger or differently organised people absorb large quantities without apparent ill effect, but the mischief grows within, and if they live long enough they break down from indigestion, or nerve or brain trouble, or heart attacks, or cancer, or other serious malady. This was observed by John Wesley and by several physicians in 1748, by Dr. R. J. Mann, who

¹ "Over 10 per cent. of all mortality is due to the abuse of alcohol ; fully 20 per cent. of all disease ; over 50 per cent. of insanity, idiocy, and pauperism springs from this source ; 75 to 90 per cent. of all criminality."—T. D. Crothers, M.D., Superintendent Walnut Lodge Hospital, U.S.A., 1905. Quoted in "Alcohol and the Human Body." Horsley and Sturge, 1907.

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described theine as a very powerful influence upon the nerve structure ; by Dr. Alcott, who, from forty years' observation, found "heart trouble" the greatest evil resulting from coffee and tobacco ; by Dr. Pavy, who testified to its producing nervous agitation, muscular tremors, wakefulness, palpitation, &c. ; and by Sir Lauder Brunton, F.R.S., who noted "dyspepsia, acidity, heartburn," &c., and advised that "tea with animal flesh should be altogether avoided." This is a favourite meal with some people, and especially with servants, who consequently suffer from much ill-health. Similarly, he says, coffee produces disturbance of digestion and nerves, palpitation, irritability and depression. Sir Risdon Bennett, M.D., F.R.S., describes the volatile oil of tea as causing giddiness, headache, tremors, and wakefulness, and the tannin as causing indigestion ; and coffee as causing similar effects. The Chinese way of using tea, he says, is to drink the infusion straight from the cup. Dr. Eugene Talbot alludes to the nervous symptoms from which tea-tasters suffer, and says that tea produces nervous dyspepsia, excitement, irregular heart action, &c. In the *Lancet* of November 1891, mothers who are excessive tea-drinkers are stated to transmit to their descendants a grave form of neurasthenia. In Germany, Mendel describes coffee-drinking as causing profound depression, sleeplessness, headache, and rapid breath. Sir William Roberts showed that tea and coffee interfere with the digestion of proteid. Sir Victor Horsley quotes his researches proving that none of the various accessories which we use with food aid peptic digestion, except water, plain or aerated. Dr. Cullen, after fifty years' observations, concluded that tea is both narcotic and sedative ; in increased doses

it extinguishes the vital principle and may be strictly called poisonous. When very strong, it ruins the stomach, and seriously damages the health of the brain and nervous system. Dr. Page found that all poisons and stimulants, such as coffee, tea, tobacco, &c., tend to cause local and general paralysis. Instability and nervousness are common symptoms. Dr. Gilman Thompson, Professor of Medicine in Cornell University, states that by drinking strong coffee at every meal the following ills are developed : muscular tremors, nervousness, palpitation, vertigo, heartburn, dyspepsia, constipation, insomnia. A recent letter in the *British Medical Journal* says that "all must admit that both tea and coffee are drugs. Children coming to my hospital are often in a condition of great nervous trepidation, and on inquiry I invariably find the mothers admit to having given them either tea or coffee from an early period in their lives." A medical man known to the present writer found "tea-disease" especially common in servants. He could recognise it at once.

Dr. Abernethy, a great medical reformer in his day, declared that the complicated madness of the human race is due to their "gormandising, and stimulating the digestive organs to excess, and thereby producing nervous disorders and irritations." Considering that cancer starts from irritation, that in the majority of cases it affects the digestive organs and their neighbourhood, and that nervous diseases have increased, as cancer has, with stimulating foods and drinks, this reasonable counsel must be held to include malignant tumours as often produced by injudicious excess.

Crato had long before written that "to avoid all those inflations, torments, obstructions, crudities and

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diseases that come by a full diet, the best way is to feed sparingly of one or two dishes at most."

In relation to kidney diseases, the *British Medical Journal* recently declared that a mild and vegetarian diet will do more than any other diet to keep the blood free from uric acid and other toxic products of nitrogenous metabolism.

Similarly, Dr. Clouston of Edinburgh, speaking of neurotic children, said that a change to milk, fish, and farinaceous foods produces a marked improvement in regard to nervous irritability, and he thoroughly agreed with Dr. Keith in his anti-flesh crusade for children up to eight or ten years.

Dr. Frederick Roberts, author of the article "Gout" in Quain's Dictionary, states that the gouty diathesis is chiefly promoted by foods which are rich in nitrogenous elements, especially lean meat, alcoholic drinks, excessive sugar, starchy foods, and some kinds of wine and malt liquors. This view is generally held by medical authorities. "It is the meat-eating classes," says Major Patrick Craigie,¹ "that suffer from gout in its thousand forms." It is clear that an unhealthy and poisoned condition of the system is produced by excess in these common articles of diet, that rheumatism and heart disease are produced thereby, and that, in addition, further toxic ingredients are added in tea, coffee, and tobacco.

At a recent meeting of the British Medical Association, Dr. L. Duncan Bulkeley spoke of the poisonous effects of alcohol and extolled the value of a purely vegetarian diet in cancer, as he had for many years

¹ *Transactions of the Royal Statistical Society.* See also Report in *Daily Telegraph*, immediately after the lecture.

observed the beneficial influence of a restricted nitro-genous diet.

Dr. Harvey Campbell has written:¹ "Malignant disease is often precipitated by mere mechanical irritation, such as that caused by a blow, soot, a sharp tooth, and the like. The effect of mechanical irritation is well known. But malignant tumours occur over and over again without such irritation, indeed this is always the case with the secondary malignant tumours."

Dr. Campbell here alludes to outside irritation, which may be either mechanical or chemical. We have to consider, on the other hand, the effect of internal irritation, and of irritability, and hyperæsthesia, produced by toxic matter in the blood or within the body. There is not less but more reason to expect recurrence of malignant tumour when the irritant is within instead of outside the body. For the matter is in the system, not a mere local irritant easily removed, but a continuous stimulus, daily renewed by ill-chosen articles of food and drink. The secondary tumours prove that in such cases the cause is internal. The production of the primary tumour by a rough tobacco-pipe, a sharp tooth, a scar, or soot, or paraffin irritation, depends in most cases on the presence in the body of matter which has interfered with perfect health. Such an external irritant would not often be sufficient to start a cancer in a plain-living savage. The modern habits of eating and drinking conduce disastrously towards a susceptible condition of the system. There has been in most parts of Europe an enormous increase in the amount per head of the following articles of consumption: flesh, sugar, potted meats, condiments, tea, coffee, beer, and tobacco.

¹ "Causation of Disease."

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The average amount of food eaten is excessive, and to this excess are added the toxines of narcotics and stimulants. Hence the immense increase of rich men's ailments among all classes, and a large increase in diseases of heart and nerves, rheumatism, gout, appendicitis, tumours, and malignant growths. If, formerly, a very sharp and continuous outside irritant was required to produce cancer only in a few, a slighter irritant is now sufficient to produce cancer in the many, for their blood and nerves are toxicated and sensitised.

The relief afforded in a case of cancer by a mild diet is a sign of the means by which the young generation may be weaned from a predisposition to the disease. It is the characteristic of poisonous substances taken continually in small quantities that the habitual user may not be conscious of harm, may even think himself to derive benefit, but is all the time accumulating material for serious future damage. Hence the breakdown now so common in middle life. *A priori*, knowing what virulent ingredients the large tea or coffee drinker is daily imbibing, the chemical physiologist would expect the collapse to come much sooner than it does in most cases. The body makes a fine struggle by evolving antitoxin. The six-bottle man and the seven-cups woman may flourish for years, but the general effect on the race is nevertheless immense. It is alleged that six out of every seven women who reach middle age have to undergo operations for tumour. The prevalence of indigestion, nervous disease, and insanity is far beyond anything ever before known, and the increase, though most rapid in the most luxurious cities, is also rapid among farmers and labourers who use stimulants largely.

It is quite clear that though many persons of the strongest constitution may consume an excess of tea, coffee, &c., habitually without obvious harm, their descendants are very much less resistant to the action of the poison. When both parents drink excessively, the children and some of the grandchildren will be nervous and susceptible. In this respect there is a parallel with the effects of gout-producing drinks, which cause a greater susceptibility in the descendants than in the original intemperate. In the case of alcohol, the children are probably most affected from the maternal side ; the same tendency may hold in the case of tea.

In the evidence before the Committee on Physical Deterioration, it appeared that, according to the recruiting officer, a very large number of would-be recruits, at Manchester, are rejected owing to ailments, such as varicocele and costiveness, brought on by excessive tea-drinking. Dr. Hawkes of Finsbury testified to the "enormous amount of dyspepsia" produced in women and girls by tea-drinking. The *British Medical Journal* expresses the most competent opinions in declaring that "it is well known—and English physicians have laid great stress on this point—that the abuse of tea and coffee often brings on gastralgia, dyspepsia, and at the same time more or less disturbance of the apparatus of innervation." The digestive organs are described by one observer as being in a state of chronic derangement, which reacts on the brain. And no less an authority than Nansen, the explorer of the North, ascertained that in Greenland coffee "contributed not a little to the decline of the race."

The old Italian writer, Sinabaldi, was in fact fully justified in his objection to "the new drink," coffee,

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as a producer of debility, disorder of digestion, palsy, and vertigo, contributing most shockingly to the destruction of our constitution.

John Wesley wrote in 1748: "I began to observe that abundance of people in London with whom I conversed laboured under . . . paralytic disorders; inasmuch that their nerves were quite unstrung, their bodily strength quite decayed." And after leaving off tea-drinking, though the first effect was a week of drowsiness and headache, his complaints all departed, his hand became as steady as at fifteen, and he was convinced of the truth of what "eminent physicians declared" that, frequently used, tea "is no other than a slow poison."

To-day Dr. Haig warns us that these alkaloids are stimulant poisons; "the deadly path of stimulation once entered upon had too often led to the complete ruin of mind and body."

Such are the effects of the continual dosing of the system with a pleasant drug in large quantities, exceeding in *daily* amount what would be medicinally and temporarily prescribed in illness or emergency for a special purpose. The fact is not realised that a drug, belonging to a class of potent vegetable poisons, is the ordinary daily drink of millions of people. Moreover they are usually drunk hot, so as to act perniciously on the teeth and on the digestive tract.

In the case of tea there is a strong bitter infusion of tannin in addition to the toxic stimulant. The action of saliva has been found by experiment to be powerfully retarded whether the tea was infused for thirty minutes or two. Digestion was also found to be much retarded. I find that an infusion of only twenty seconds' contact

with the leaves still has strong physiological effects ; the volatile oil and theine are very quickly dissolved in hot water ; the tannin takes longer.

Chemists testify that it is no figure of speech to describe the infusions of tea and coffee, commonly used, as poisons. The alkaloid "is a compound similar to morphia and nicotine." Mr. Graham describes them as "among the most powerful poisons of the vegetable kingdom." Experiments on animals show that they produce excitement of the nervous system, and, in larger injections, death.

In his book on "Nervous and Mental Diseases," Dr. Church Paterson recommends that simplicity should be the rule as regards food. "Researches in the physiological chemistry of digestion, as well as observations in many pathological conditions, have established that auto-intoxication, from the absorption of poisonous substances generated in the alimentary canal by putrefaction and fermentative processes, is not only a real thing, but a frequent factor in the etiology of a number of nervous disorders, such as headache, neurasthenia, hysteria, neuralgia, and even graver maladies, like epilepsy, melancholia, mania. In these cases it is essential to regulate the diet."

Sir William Broadbent, in his book on "Heart Disease," states, in relation to aneurism, that soups, game, salt fish, rich sauces, beer, and tea should be forbidden, and meat be used in moderation, as extractives, rich foods, and excess of nitrogenous matter may lead to the retention of toxic materials in the blood. In relation to atheroma, stimulants of all kinds should be forbidden, and in bradycardia a light and simple diet should be taken, with little or, no meat. And in

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valvular disease of the heart a diet consisting largely of meat is stated to cause a serious addition to the work imposed on the heart, through the accumulation of imperfectly oxidised waste in the blood and resistance in the capillary circulation. The bearing of these remarks on liability to cancer is not remote.

In his "Manual of Pharmacology," Dr. Dixon states that caffeine is an alkaloid obtained most readily from tea, which contains anything from 2·5 to 4·5 per cent. Many other plants which have been employed in all regions of the globe for drinking purposes have been found on analysis to contain caffeine or one of the allied alkaloids. Caffeine exerts three important actions when taken into the animal body: (1) it excites the nervous system; (2) it has an action on all muscular fibre; (3) it is a diuretic. The drug is absorbed very easily. Caffeine acts on the brain somewhat as strychnine on the spinal cord. It is a true cerebral excitant. Large doses may cause confusion of thought, and flashes in the eyes or singing in the ears, excitement, tremulousness, and even toxic convulsions. They produce a profound change in the muscle protoplasm, accelerate the rhythm of the heart, and increase blood-pressure.

It is not very often that doses of this magnitude are taken at one time. But the effect of daily minor doses is more subtle and more serious, after some years, than any great occasional excess; and, apart altogether from cancer, there can be no doubt that every year thousands of persons die prematurely from tea and coffee.

The effects of chronic intoxication by nicotine or tobacco may appear in the following symptoms: cough, alimentary disorders, feeble heart, tremors, impaired memory and double vision.

If the world be regarded as a huge experiment-ground for ascertaining the effects of stimulants of this nature, we see that wherever these are much used, cancer develops in similar proportion ; that wherever they or similar poisons are not used, cancer is rare ; that classes of persons which use large quantities have much cancer, and classes which use them little, or not at all, have little or no cancer. This alone would be fairly conclusive evidence as to their being a main cause. But the conclusion is corroborated by every other consideration ; the long-observed liability of the over-fed ; the general exemption of savage races, until they adopt our habits ; the parts of the body most attacked ; the kind of treatment which exacerbates or mitigates the malady ; the known effects of exterior visible irritation, and the well-recognised nerve weakness and irritability and heart and digestion weakness caused by internal stimulants and narcotics ; the concurrent increase of nervous, digestive, and heart maladies with increased consumption of the articles named, and the unquestioned derivation of these disorders largely from that consumption.

We may thus conclude that since cancer is caused to a great extent by excess of drugs used as drinks, &c., and of toxic or irritating food of *various* sorts, especially probably potted and chemicalised meats, pork and other flesh, the malady may be greatly reduced in frequency in any country by the removal of such articles from the dietary. Indeed, although the present and very likely the next generation will in any case be somewhat affected by inherited liability, which includes impaired strength of digestion and nerves, we may confidently hope that at some future time a reasonable

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frugality may be followed by immunity not only from cancer but from many other afflicting maladies arising in consequence of improper diet. Neurasthenia, now much more common than ever before, and the accumulated evils resulting from the habitual ill-treatment of the body and blood, would at once diminish. It will perhaps in a hundred years be recognised that Sydney Smith spoke seriously when he said in 1814 that "all people above the condition of labourers are ruined by excess of stimulus and nourishment." And wisely when he wrote in 1836 : "By eating little and drinking only water, I keep body and mind in a serene state. I find that all my miseries have proceeded from indigestion. I am convinced that digestion is the great secret of life." There is immensely great reason for attacking the cause rather than the symptom, the roots rather than the shoots, for prevention of the cause prevents at the same time a host of ailments, ill conditions, and maladies, and raises the whole race into stronger life, while a potion or a caustic cure, if ever discovered, still leaves the noxious habit untouched, and permits racial destruction to proceed unchecked.

Yet we must not expect a rapid cessation of nervous diseases or of cancer as a result of more frugal ways of living ; I am persuaded by much observation that weakness produced by stimulant poisons continues to some degree through several generations, and indeed often more perniciously than in the first offenders. The habits and condition of the mother before and after a child is born are now known to be of the utmost consequence. What we may expect with generally improved habits is a rapid reduction. And many even of the most susceptible may possibly

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or probably attain immunity through complete abstention.

In view of the strong presumption raised by the facts above enumerated, it would be worth some united effort to make experiments on a large scale. If groups of, say, five thousand persons in different parts of the country could be induced to abstain for life from the suspect articles of food, and to live on grain and fruit, which provide an infinite variety of clean appetising fare, their rate of mortality from cancer and other diseases, compared with the rate of the general community, would afford instructive evidence. I have myself not the smallest doubt that if they were of average healthiness to begin with, they would, with a reasonable scientific diet, much surpass the surrounding average in health and vitality. If a sufficient number of stalwarts would offer themselves, branches of the great Life Insurance Societies might be formed, for the insurance of these at a lower rate, and the comparative rate of incidence of cancer would soon be discovered. At the same time light would be thrown on the effects of stimulants in the production of nervous and other disorders.

P.S.—Since writing this article, I have received an account of the elaborate experiments of Mr. Fisher at Yale, U.S.A., proving the marked superiority of a non-flesh diet in contributing to endurance. The subject should be studied in relation to the poisons commonly existing in the ill-treated body which increase fatigue. This is a promising field for reform, with a certainty of increased efficiency.

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The extraordinary feats of abstainers from flesh and stimulants in various athletic fields, far exceeding what would be possible for their small numbers if diet were not the potent factor, are thus ratified by accurate scientific experiment.

Meanwhile the latest statistics for this country, and for many others, show a continuous great increase in the consumption per head of animal flesh, and of other stimulant foods and of stimulant drinks. Hence the immediate prospect for any favourable change in the amount of cancer, nervous and digestive trouble, and of the diseases dependent on luxury and worry, is far from hopeful.

NOTES BEARING ON THE ABOVE THESIS

Professor Chittenden's Experiments

Professor Russell H. Chittenden, Ph.D., LL.D., Sc.D., Director of the Sheffield School of Yale University, has given details of important experiments made by him, fully confirming the presumption derived from instances recorded by careful physiologists that health and strength may be better maintained on a much smaller diet and smaller proteid weight than had been assumed to be necessary. Voit found that a purely vegetable diet, with 8.2 grms. of nitrogen, was sufficient, and Jaffa obtained similar results with persons living on fruits and nuts.

Professor Chittenden first made experiments on himself, reducing his diet gradually. His health improved; a rheumatic joint got well permanently; headaches and bilious attacks ceased altogether. A light breakfast and supper, and a fairly substantial lunch answered very well. With diminished proteid there is increased vigour.

He found by experiments on university instructors, athletic students, and hospital corps volunteers (twenty-six altogether), that one-third to one-half of the amount of proteid usually consumed amply sufficed, and resulted in a decided increase of muscular power at the end of nine months.

Any habitual excess, he says, imposes an unnecessary strain on the organism, damages the bodily machinery by

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wear and tear, causes disease in liver and kidneys, and inflicts upon the body toxic products of the purin type, xanthin, pyro-xanthin, guanin, adenin, "uric acid."

Several of the persons under experiment obtained relief from gouty or rheumatic symptoms.

"It is one of the axioms of physiology that the majority of the diseases of mankind are due to, or connected with, perversions of nutrition."

Among these diseases there seems to be every reason to place the majority of tumours.

Evidence given before the Departmental Committee on Physical Deterioration

Dr. Robert Jones.—"Chronic indigestion from beer is very common. . . . Beer-drinkers are liable to a kind of acid fermentation with gastric catarrh," in consequence of which "what food they take is indifferently assimilated." This leads to ill-nutrition. Acidity, we may observe, and a rheumatic condition are very often found to precede cancer.

Dr. C. R. Browne, Dublin.—The Lunacy Commissioners ascribe some of the increase of lunacy in Ireland to the excessive quantity of tea-drinking. The amount taken now, declared Dr. Browne, is "something tremendous." At every cottage round the place where he was in Queen's County it was drunk at all meals, and was generally kept on the hob and taken in sups all day.

The Bishop of Ross.—Milk was formerly very largely used with porridge and potatoes. The present food is bread and a very bad form of tea. Many families have practically no other food than bread and strong tea all the year.

Mr. Close.—In many parts tea is made frightfully strong; bread is very bad. Adulterated tinned milk, extremely

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bad bacon, and extremely bad bread are the fare of large numbers of the British peasantry, who used to live on well-cooked wholesome food.

Dr. Lewis Hawkes.—Tea, pickles, vinegar, and a little bread form the fare of large numbers of factory girls; strong tea early and late. They naturally get dyspepsia.

Dr. Eichholz.—Food is the point about which turns the whole problem of degeneracy.

Address by Dr. Robert Jones to the Society of Arts

There are new forms of heart disease. There is more hurry and overstrain, causing an increase of insanity. Sedatives for brain and heart are used as never before. The amount of adulterated, preserved, and unwholesome food sold is enormous; much is distinctly poisonous. Tea, coffee, and tobacco cause many breakdowns.

Official Reports of Diplomatic and Consular Agents Abroad, 1871

Mr. A. A. Paton, Consul at Ragusa, reported on the bad effects of tea and coffee. They produce oppression and disturbed digestion. Lemonade or a burnt barley drink are good substitutes; the change substitutes serenity of mind for a harmful expenditure of nervous force.

Tea-drinking in the Orkneys and Shetlands

The people of the Orkneys and Shetlands are described as having taken to tea-drinking with a zest almost unsurpassed. It is tea, tea, tea, black and in large quantities, "literally from morning till night." The effects are disastrous.

In the larger towns of Scotland the excellent Scottish diet of former times has been replaced by "pork, bacon, beef, slops, and white bread." "An excessively vile,

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tough pork, highly seasoned with salt, pepper, and salt-petre, is a common dish." Vile seasoned pork joined with black tea; what a combination for destroying the race!

Effect of Alcohol in Continual Excess

More than three-fourths of the disorders in "fashionable life" arose from the use of alcohol, according to Sir Andrew Clark, senior physician to the London Hospital. "Perhaps the greater mass of the disorders, as distinct from diseases, with which mankind is afflicted arise from the misuse of this drug." It is the frequent small or moderate quantities, and not the occasional bout, which do the harm. The stomach, and later the constitution, is sapped; then suddenly comes the severe and dangerous illness. There is an ever-increasing volume of medical opinion against even the moderate drinking of alcoholic liquids.

Dr. Clouston, who speaks on the subject of intemperance and insanity "with unrivalled knowledge and unquestioned authority," has affirmed that a larger consumption of alcohol has led to a larger proportion of cases of insanity and deaths from nervous diseases.

In Dr. Tatham's Supplement to the 55th Report of the Registrar-General, it is computed that the mortality figure of the publicans in industrial districts is 2030, compared with 1000 for all males, 664 for grocers, 632 for labourers, and 533 for clergymen. The rate for total abstainers in a healthy occupation would of course be still lower.

Dr. Oliver, a great authority on the physiological effects of alcohol, states that alcohol first stimulates and then depresses the neuro-muscular system. Diseases of digestion, liver, heart, and nerves result. We may fairly assume that the great mortality from various diseases caused by alcohol masks the influence which alcohol has, particularly when combined with sugar, in the causation of cancer. The Departmental Committee on Physical Deterioration

had evidence that the surviving children of two alcoholic parents are seriously deficient in vitality. The Committee were convinced "that the abuse of alcoholic stimulants is a most potent and deadly agent of physical deterioration."

According to Sir T. Lauder Brunton, F.R.S., the organs chiefly affected are the stomach, kidneys, liver, and nervous system. An able writer on this subject has stated that the ill effects of alcoholic excess are traceable by the microscope in all the important organs of the body, especially in the digestive, nervous, and circulatory systems. The subsequent effect of alcohol is always depression of the heart's action.

Dr. Pavý has given views similar to the above. Gout, he says, appears to be the offspring, not of simple alcoholic liquid, but of alcohol in combination with saccharine and extractive matter. The statistics which I have compiled¹ do not give the first place to beer as a contributory cause of cancer, though indicating that it plays a considerable part. The beer drunk in Munich and Stuttgart has bad effects. English doctors declare that the "beer heart" has become much more common with the use of similar beer. If, as we contend, cancer may be produced by *various* irritations and various internal poisons, the causes which produce gouty and rheumatic toxins are likely to favour the development of cancer.

Dr. Arthur C. Luff writes in "The Practitioner" that in the case of a gouty person a spare and plain diet is required, and usually plenty of water and no alcohol. Excessive consumption of meat is a "potent factor" in the production of a gouty state.

"Universal experience," writes Dr. J. N. Potter, of St. Leonard's, "shows that the remote effect of long continued use of alcohol is that of an *irritant poison* setting up changes in the structure of all vital organs."

The great work of Sir Victor Horsley expresses in the

¹ "Strength and Diet," p. 508.

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most convincing way the disastrous physiological effects of alcoholic drinks on the average man. Although cancer may be among the less common results, statistics prove that certain kinds of liquors do lay the body open to attack.

The large proportion of women who have been subject to tumours and cancers is partly accounted for by their less active habits, deficiency of exercise while consuming toxic foods and drinks, and by their much greater subjection to worry, also a toxic agent. It is very clear that much malignant disease may exist which does not depend on alcohol.

Variety of Predisposing Conditions

It is well known that an unhealthy constitution, or else an unhealthy condition of body produced by various causes, among the most common of which is under or over feeding, is favourable to the formation of abscesses. Irritation of the skin, pressure on the gums, or some slight poisoning or wound, these often lead to abscesses or boils. It is also established by much experience, especially in wars, that moderate and frugal eaters are to a surprising degree more able to stand wounds without ill consequences than those who are accustomed to gross fare and the flesh of beasts.

It is known that cancer frequently follows on wounds or scars. The probability is great that the condition of body favourable to abscesses, suppurating wounds, &c., is also conducive to the development of cancer.

Certainly those tribes which bear wounds best and recover most rapidly are also less subject to cancer. And these are also distinguished for frugal living.

Medical writers who bear witness to the influence of syphilis, lupus, &c., in predisposing to cancer, implicitly testify to the variety of toxic elements and irritations which may start the disease.

The Bad Health of Butchers

Butchers, in spite of the favourable conditions in which they live, have long been one of the most unhealthy of all classes. Dr. William Farr, in his work on the mortality of occupations, wrote that their mortality was much heavier than that of any other class except innkeepers and beer-shop keepers, at the ages under sixty-five. At thirty-five the butchers' death-rate was extremely high. They have one of the highest rates for cancer. It is very noteworthy that these two classes, both highly nourished, should have this enormous amount of fatal disease.

A similar condition of illness is found among many of the farming class. One writes : "Both parents and nearly all my relatives died of cancer, and they all lived in the same way (on pork, ham, bacon, tripe, trotters, and wine and beer, &c.)."

Local Observations on Cancer, &c.

At Gibraltar, Dr. W. Turner of Colonial Hospital reported that the predisposing causes of cancer there seemed to be tobacco-smoking in males and premature child-bearing in females. "The Spaniard's cigarette or cigar is never absent from his lips if he can help it," and it burns up to his lips.

In Ceylon only 1 in 16,820 persons is known to have died of cancer ; it is forty and thirty times more common in the Southern than in the Eastern and North-western Province. It is associated usually with the parts about the mouth. "This may be due to betel-chewing," betel consisting of tobacco, betel leaves, areca nut, and slaked lime. They also eat curry flavoured with hot chillies. The people of the Northern Province, where there is an excess of the disease, are great betel-chewers, and men and

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women smoke very strong tobacco, smoking cigars to the burning end.

In Southern Nigeria cancer is rare. There was one case at Ifon, of a woman who had lived on yam dough, with strong cayenne and oklas sauce.

In Queensland, no case seen in ten years among aborigines. In the West Indies, very rare among natives far from Europeans.

The great increase of cancer in Sweden (also in Denmark and Norway) has taken place simultaneously with the increase of luxurious feeding. The consumption of coffee has about trebled since 1861, of sugar has increased from 5 hectograms to 18, of tobacco in the proportion 7 to 11, and of beer from 11 to 33·4.

Cancer is less prevalent in Brittany and SE. France than in the richer districts where more flesh, &c., is eaten. M. Lucas Champonnière is reported to have said that every day fresh confirmation was forthcoming that the excessive use of flesh-eating was the principal cause of appendicitis. In Brittany it is rare.

Medical and other Testimony bearing on some of the Conditions predisposing to Cancer

Dr. Robert Williams, of the Middlesex Cancer Hospital, wrote in the *Lancet*: "Probably no single factor is more potent in determining the outbreak of cancer than high feeding. The glutinous consumption of meat . . . is likely to be specially harmful. Statistics show that the consumption of meat has for many years been increasing by leaps and bounds, till it has now reached the amazing total of 131 lbs. per head per year, which is more than it was half a century ago, when the conditions of life were more compatible with high feeding." Among other probable factors in the production of cancer, Dr. Williams names deficient fresh vegetables and deficient exercise.

The consumption of flesh per head is now much greater even than when Dr. Williams wrote the above letter.

Sir Henry Thompson, the great physician, wrote : "I have come to the conclusion that more than half the disease which embitters the middle and latter part of life is due to avoidable errors in diet, and that more mischief, in the form of actual disease, of impaired vigour, and of shortened life, accrues to civilised man in England and throughout Europe from erroneous habits of eating than from the habitual use of alcoholic drink, considerable as I know that evil to be."

The damages of excess have long been known to the few who observed.

"The eating of much flesh," wrote Porphyries in 233 A.D., "fills with a multitude of diseases." This variety of diet, according to Antiphanes, is the one principal cause of disease.

"It would be true progress," writes Dr. Elie Metchnikoff, "to go back to the simple dishes of our ancestors."

"Dyspepsia is due, in nine cases out of ten, to too much food, too little exercise."—*Lord Avebury*.

"Take care of your digestion, which means brain."—*Huxley*.

"The study of dietetics should be looked upon as very nearly, if not quite, as important as the study of therapeutics."—*British Medical Journal*.

"It is open to question whether the whiskey bottle or the teapot exercises the more baneful influence."—*J. Batty Tuke, M.D., F.R.S.*

"The misery of the women of the poorer classes is more than doubled by the use of tea."—*Sir Benjamin Richardson, M.D., F.R.S.*

"We are living on false stimulants. . . . I am writing as an observing physician who cannot reconcile England's continued greatness with the growing luxury practised by her sons."—*Anon. letter, Westminster Gazette*.

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"The Eating and Drinking Reformation is at the foundation of all the good that would be produced in society."—*Joseph Brotherton, M.P.*

[Cobden unconsciously bore witness to the staying powers of vegetarians when he said that of the 658 members of the House of Commons, Colonel Thompson was the best able to endure its fatigues, and Mr. Brotherton came next. These two members were both teetotallers and vegetarians.]

"I have observed that a taste for spicy condiments, butcher-meat, and alcoholic liquors is associated."—*C. O. Groom Napier.*

"Meat should be avoided by the man who would utilise his will to conquer his drink crave. I have never had to treat a dipsomaniac who was also a vegetarian, nor indeed have I heard of one."—*Dr. C. E. Macnamara.*

"Such appetite always has its beginning in exciting foods, and narcotic or stimulo-narcotic drinks, and depressant or tonic drugs."—*Dr. Jackson.*

"The more flesh food is used, the more serious is the danger of confirmed alcoholism."—*Dr. H. B. Fowler, forty years lecturer on Dipsomania.*

Dr. Arthur Newsholme, M.D. Lond., D.P.H., the statistician, finds that the rate of mortality of publicans, wine and spirit merchants, &c., between the ages of twenty-five and forty-five is very little less than four times the rate of clergymen and ministers. Their high mortality from other diseases than cancer makes their excessive cancer rate still more remarkable. From twenty-five to sixty-five their death-rate from alcoholism is five times as great as that of other men, and nearly twice as many commit suicide. More than four times as many die of gout. Publicans head the list under alcoholism, liver diseases, and gout, and only specially dangerous trades exceed them in kidney disease.

Dr. R. J. Mann states that the immediate effect of large

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doses of tea may be very severe; convulsions and death have followed; theine is a compound similar to morphia and nicotine; there are about 175 grs. of theine to 1 lb. of tea-leaves. But we may observe that the effect of frequent moderate doses is insidious, and not usually discovered till the constitution has been greatly damaged and life shortened.

Dr. Kellogg discards tea and coffee from the bill of fare of his sanatorium "because they are poisons" injurious to digestion and to the nervous system. "The digestion of starch ceases in the presence of tea or coffee."

Dr. Combe wrote that "when made very strong or taken in large quantity [this is habitual among the poor], tea and coffee not only ruin the stomach, but very seriously derange the health of the brain and nervous system."

Dr. Bell of Philadelphia, Professor Sweetser and Dr. Burdell of New York, and Dr. Hooper give similar opinions. The latter says that the Chinese keep tea for at least twelve months before using it, in order that its narcotic properties may evaporate.

Dr. Beaumont stated that hot tea and coffee spoil digestion both directly and through the damage done to the teeth.

Professor Prescott showed in 1882 that caffeine and theine are built on the chemical type of the alkaloids, which include narcotics, stimulants, hypnotics, deliriants, poisons, tonics.

Dr. Sharper contended in the *British Medical Journal* that disorders of nerves affecting tea and coffee drinkers are derived mainly from the essential oil, rather than from the theine.

Dr. Bock wrote: "The nervousness and peevishness of our times are chiefly attributable to tea and coffee. The digestive organs of confirmed coffee-drinkers are in a state of chronic derangement, which reacts on the brain."

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Dr. Robert Hutchison states that much anaemia and neurosis result from the excess of tea and bread. At Manchester a very large number of young men are rejected as recruits on account of tea diseases.

Messrs. Parker and Kenwood, in their "Hygiene" observe that the abuse of tea and coffee produces constipation, weakened digestion, sleeplessness, and nervous troubles.

Increases in Flesh and Toxic Materials Consumed

Imports of flesh to the United Kingdom were in 1857-59, 1.24 million cwt.; in 1874-76, 5.7 million; in 1889-91, 13.16 million; in 1899-1901, 20.23 million; last year the amount was still larger.

The flesh imports per head were, in 1857, 5.95 lbs.; in 1903, 50 lbs.

Poultry and game, potted meats, heads, hearts, livers, tongues, have also been much more largely eaten; also fish, eggs, and condiments.

At the same time the amounts of sugar per head and of materials conducive to a gouty condition have much increased.

Also of a large number of toxic materials, adulterants, and preservatives. Beer, wines, temperance drinks, &c., are treated with pernicious ingredients.

Potted meats, sausages, &c., have enormously increased in amount consumed, and have to some extent been composed of putrid meat, chemically coloured, and disguised with spices and herbs. This is official testimony.

Tea and tobacco, both contributing their toxins, have, as already stated, been consumed far more largely than ever before.

75th Annual Report of Dorset County Asylum

"The ratio of insanity seems to be constantly rising, and in this county the increase is so marked that it may well disquiet us. With a decreasing population the number of lunatics has of late years been steadily increasing."

"Dorset County Chronicle," August 15, 1907

Dr. Macdonald, the Medical Officer, reports: "The father, mother, son, and daughter, and even the suckled infant, all share alike from the ordinary fare of black tea, bread and cheese, morning, noon, and night. If the beverage tea were properly prepared and not indulged in too freely, no harm would be likely to accrue, but what will be said of the ordinary labourer who consumes daily two to three quarts of black tea thus prepared? A brew is made between 5 and 6 A.M., and this same pot continues in use by being added to from time to time during the working day, until at last it is little else than rank poison. The fact that this tea is without either sugar or milk makes things worse, and I am convinced is in many cases the cause of insanity among the labouring class.

"In Dorset the corrected birth-rate shows the alarming decline of 30 per cent. during the period of fifty years. The process of depopulation which has resulted in such a serious loss of persons to the county in the five decades simply means that the weak, the insane, and diseased were left behind."

After speaking of the intermarriage of the mentally diseased and of neurotics, Dr. Macdonald concludes: "At least the risks should be better known than they are at present, and some restrictions might be put on the marriage of those whose record of mental health is so bad as to promise a heritage of insanity to their children. To

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these facts there has to be added the far-reaching effects of an innutritious diet, the consequences of which may ultimately prove to be of even greater importance for the future of the race than all the coloured pictures of the evils of bad environment."

Comparison of Countries and Habits in Relation to Cancer

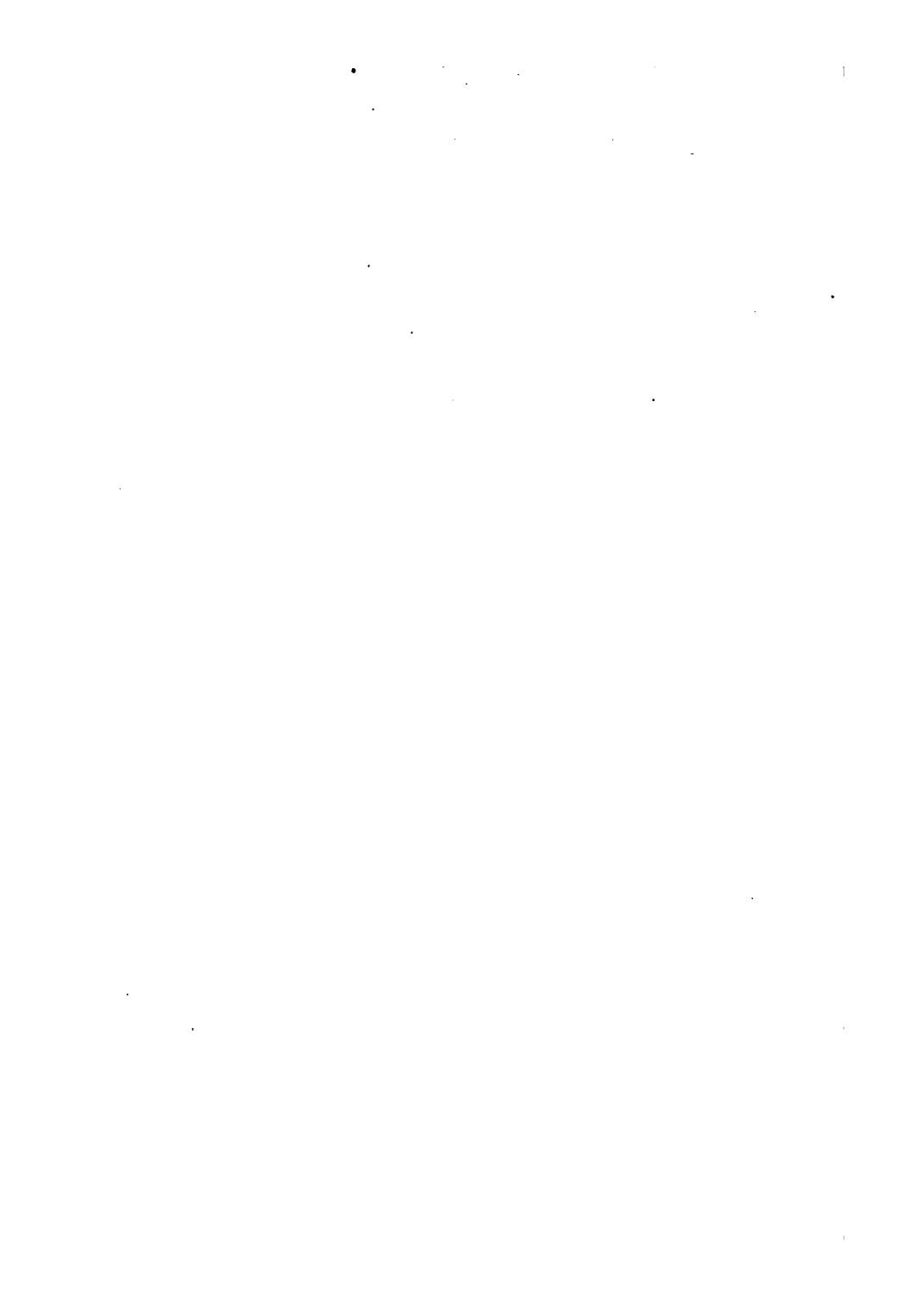
In an investigation of the relation of the amount of cancer in a large number of countries, and of the prevailing diet habits of those countries, I found that of 25 countries using beasts' flesh largely, 19 had a very high or high cancer rate, 5 a moderate rate, and 1 a low rate. Of 39 countries eating little or no flesh, *none* had a high cancer rate. Of 30 countries drinking much tea or coffee, 25 had a high or very high rate, and 5 a moderate rate, and none had a low rate; and of 41 countries drinking little or no tea or coffee, *none* had a high rate, 5 a moderate rate, and 36 a low or very low rate.

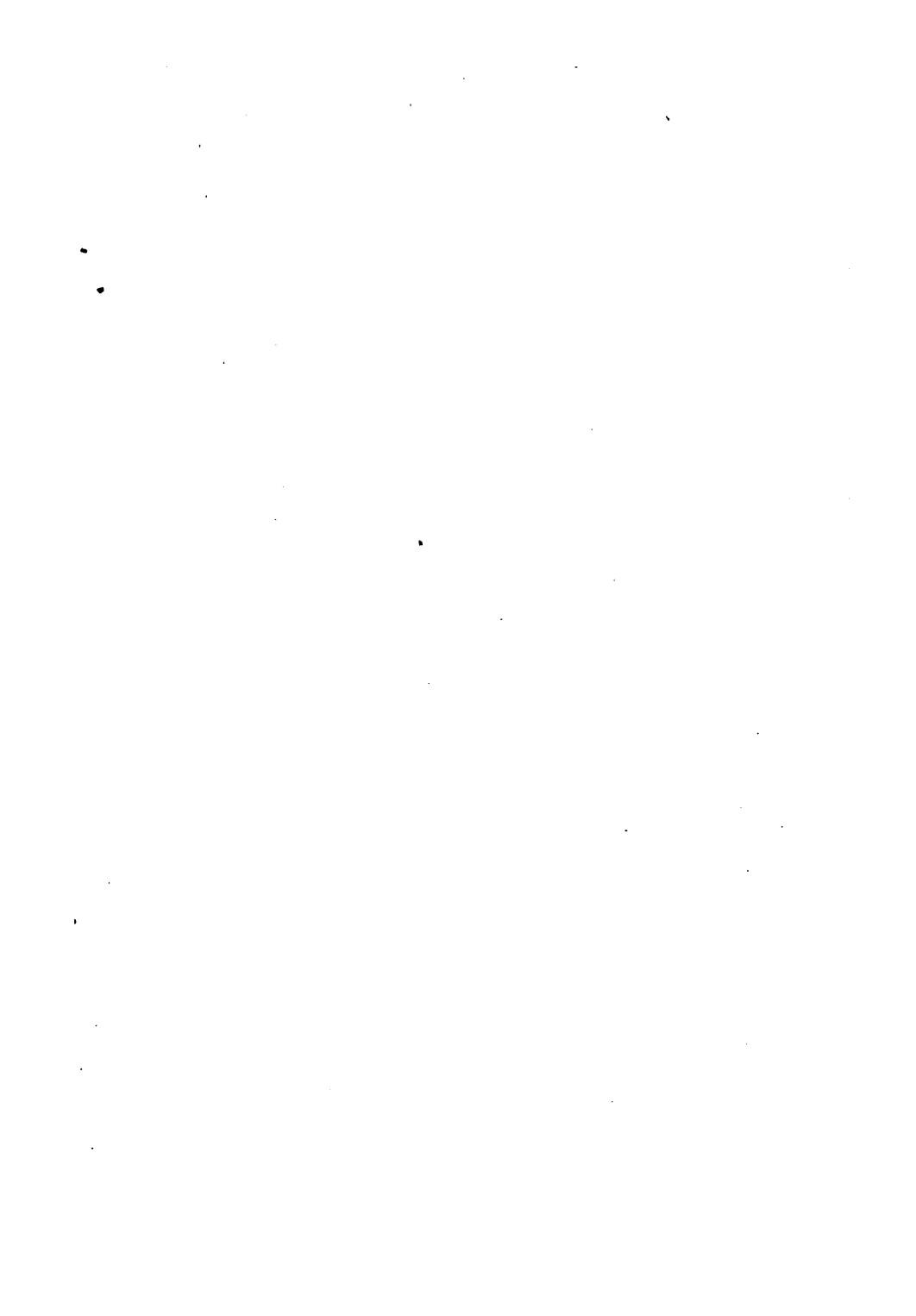
Those few peoples, about 9 or 10, who do not use any, or who use very little, of these articles—namely, flesh, tea, coffee, beer, tobacco, spirits—have hardly any cancer or none.¹

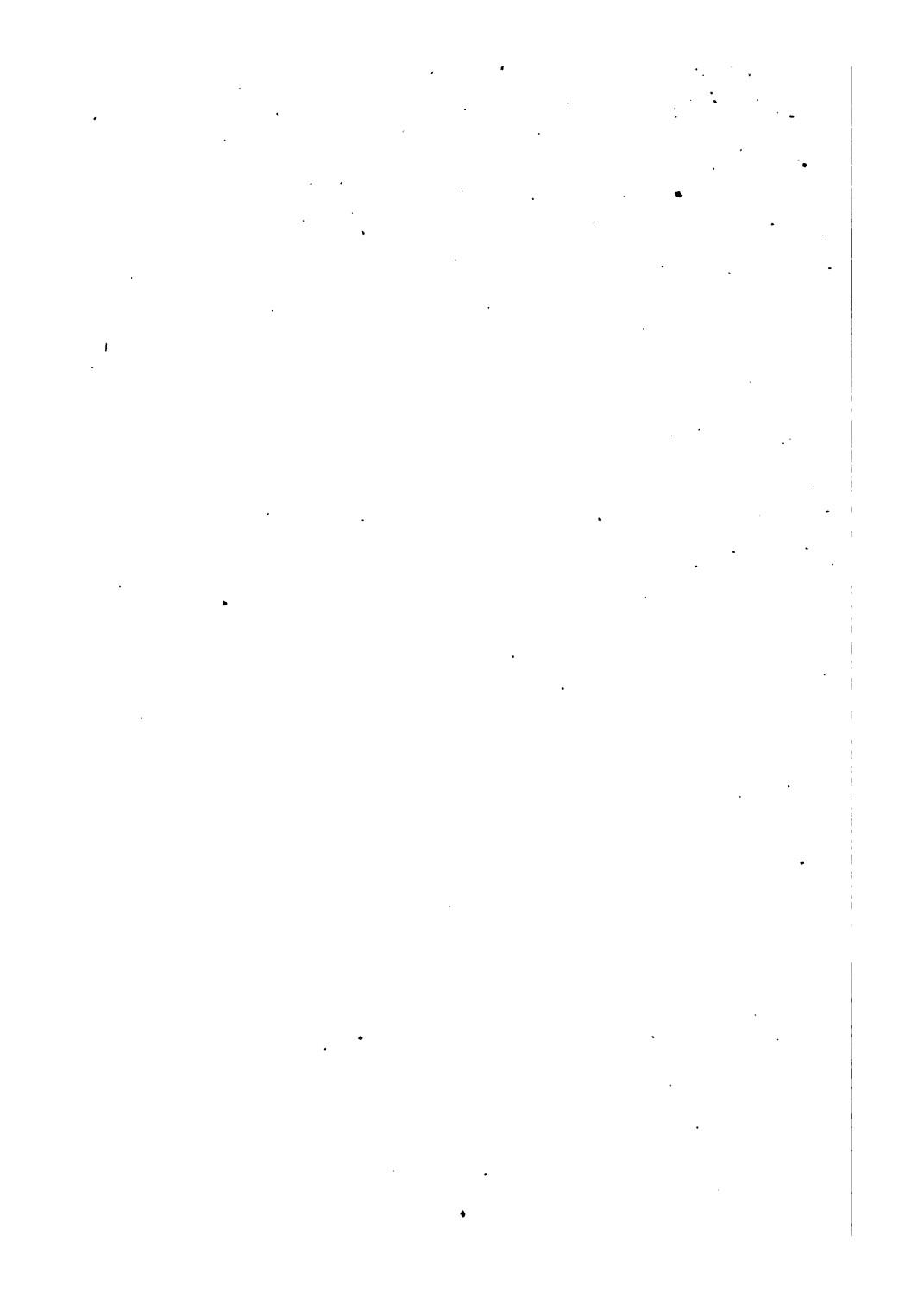
It seems to be quite clear that a nation freeing itself from narcotic luxuries and from unnecessary worries will in time abolish the chief causes not only of cancer but of many other afflictions.

¹ For full particulars, see "Strength and Diet," p. 508.











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